guide **10**. The wire guide **10** and obturator **20** are removed and an impactor cap **45** is placed over the cannula **30** and tapped gently into the cortical surface. The methodology of using the cutter cylinder **50** as described above is the same. Basically the only difference between methods is the use or non-use of the forked cannula **40**.

It is understood that the above-described embodiment is merely illustrative of the application. Other embodiments may be readily devised by those skilled in the art which will embody the principles of the invention and fall within the spirit and scope of the invention thereof.

I claim:

1. A method for harvesting bone through a guided delivery instrumentation system which operates through a percutaneous, laparoscopic, minimally-invasive technique, comprising the steps of:

making a small incision above a harvest site;

inserting an elongated guide wire with a blunt proximal end and a pointed distal end into the incision, distal end first, to a bone area to be harvested;

gently impacting the guide wire proximal end whereby the guide wire distal end enters into said bone area in the harvest site;

placing a cylindrical obturator with a generally cylindrical channel centrally formed within said obturator along its central longitudinal axis concentrically over the guide wire;

guiding the obturator onto to the guide wire toward the guide wire distal end whereby the obturator gradually splits muscle and tissue until it contacts said bone;

placing a first, hollow, cylindrical dilator concentrically over said obturator thereby increasing said incision to a percutaneous approach;

removing said guide wire and obturator;

placing an impactor cap over said first dilator;

gently tapping said first dilator with impactor cap into said harvest site bone;

inserting an elongated, hollow, cutting cylinder, said cutting cylinder having a handle on a proximal end and a hollow and a cutting tip on a distal end, into said first dilator whereby said cutting tip is brought into engagement with said bone;

cutting a portion of said bone with said cutting tip and bringing said cut portion through the hollow cutting tip into the cutting cylinder;

removing the cutting cylinder and cutter tip from the first dilator;

removing the handle from said cutter cylinder;

removing the cut bone from the cutter cylinder;

removing the first dilator from said harvest site; and

closing the incision.

2. A method for harvesting bone as described in claim **1**, further comprising the step of:

placing a second, hollow, cylindrical dilator concentrically over said first dilator.

3. A method for harvesting bone as described in claim **2**, further comprising the step of:

placing a third, hollow, cylindrical dilator concentrically over said second dilator.

4. A method for harvesting bone as described in claim **1**, further comprising the steps of:

placing a hollow, cylindrical cannula having a proximal end and distal end, said distal end being longitudinally notched resulting in two protruding arms parallel to the central axis of said cannula, concentrically over said dilator whereby said cannula distal end engages the bone area;

placing an impactor cap over said cannula; and

gently tapping said cannula with impact cap into said bone area.

5. A method for harvesting bone as recited in claim **4**, further comprising the step of:

placing a second, hollow, cylindrical dilator concentrically over said first dilator.

6. A method for harvesting bone as recited in claim **5**, further comprising the step of:

placing a third, hollow, cylindrical dilator concentrically over said second dilator.

7. A method for harvesting bone as recited in claim **4**, further comprising the steps of:

removing said dilator prior to insertion of said cutter cylinder; and

inserting said cutting cylinder into said cannula.

8. A bone harvesting apparatus for the removal of bone material from a living body, comprising:

a guided delivery system, comprising:

an elongated guide wire having a pointed distal end and a blunt proximal end, said distal end being adapted to engage a bone from which bone material is to be extracted;

a generally cylindrical obturator with an internal, hollow channel formed along an elongated central axis and positioned concentrically over said guide wire, said obturator having a generally dome-shaped distal end adapted to dividing tissue abutting said bone, and a proximal end with gripping means;

a generally cylindrical, hollow, open-ended dilator concentrically positioned over said obturator; and

a generally cylindrical, hollow, open-ended, forked cannula concentrically positioned over said dilator; and

a coring device within said delivery system for extracting precise amounts of bone material.

9. A bone harvesting apparatus as recited in claim **8**, wherein said guided delivery system is further comprised of:

a plurality of generally cylindrical, hollow, open-ended dilators concentrically positioned over said obturator.

10. A bone harvesting apparatus as recited in claim **8**, wherein:

said dilator has a proximal end and a beveled distal end with teeth protruding therefrom.

11. A bone harvesting apparatus as recited in claim **10**, wherein said coring device is comprised of:

a cutter cylinder having a proximal end and a distal end interconnected by a hollow tube;

a hollow cutting tip attached to said cutter cylinder distal end;

a handle joined to said cutter cylinder proximal end;

wherein said cutter cylinder and cutting tip are adapted to fitting within said dilator.

12. A bone harvesting apparatus as recited in claim **10**, wherein:

said forked cannula has a proximal end terminating in two parallel, block-like elements, and a distal end longitudinally notched resulting in two longitudinally protruding arms parallel to a central, longitudinal cannula axis.

13. A bone harvesting apparatus as recited in claim **12**, wherein said coring device is comprised of:

a cutter cylinder having a proximal end and a distal end interconnected by a hollow tube;

a hollow cutting tip attached to said cutter cylinder distal end;

a handle joined to said cutter cylinder proximal end;

wherein said cutter cylinder and cutting tip are adapted to fitting within said dilator.

14. A bone harvesting apparatus as recited in claim 11, wherein:

said cutting tip has a proximal end joined to the cutter cylinder distal end and a distal end having two, protruding, generally triangular flat blades, each having two lateral sides and a distal tip, said distal tips being connected to each other, each said blade lateral side being formed into a cutting edge, said cutting tip distal end also terminating in two cutting edges positioned between said protruding blades.

15. A bone harvesting apparatus as recited in claim 13, wherein:

said cutting tip has a proximal end joined to the cutter cylinder distal end and a distal end having two, protruding, generally triangular flat blades, each having two lateral sides and a distal tip, said distal tips being connected to each other, each said blade lateral side being formed into a cutting edge, said cutting tip distal end also terminating in two cutting edges positioned between said protruding blades.

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16. A method of harvesting bone, the method comprising:

inserting a guidance member through a percutaneous incision to a bone, at a bone harvest site;

sequentially inserting a set of at least one dilation channels through the incision, a first dilation channel of the set having been positioned over the guidance member;

inserting a cutter device through a member of the set of at least one dilation channels to engage the bone harvest site; and

cutting the bone with the cutter device to bring a portion of the bone into the cutter device's interior.

17. A method according to claim 16, the method further comprising:

making a percutaneous incision, that is at most 2 centimeters in length, above the bone harvest site.

18. A bone harvesting apparatus, the apparatus comprising:

a guidance member adapted to engage a bone from which bone material is to be extracted;

a set of at least one dilation channels, a first dilation channel of the set being adapted to be positioned over the guidance member; and

a cutter device adapted to be inserted into a member of the set of at least one dilation channels to engage the bone, the cutter device comprising a hollow collection shaft.

19. A bone harvesting apparatus according to claim 18, wherein the cutter device is disposable.

20. A bone harvesting apparatus according to claim 18, wherein a channel of the set of at least one dilation channels is adapted to move in an arcing motion over the bone to permit the cutter device to harvest bone from more than one position.

21. A bone harvesting apparatus according to claim 18, wherein a channel of the set of at least one dilation channels comprises a pair of members protruding from its distal end to position itself against the bone.

22. A bone harvesting apparatus according to claim 21, wherein one arm of the pair of members is longer than the other arm of the pair of members.

23. A bone harvesting apparatus according to claim 21, wherein one arm of the pair of members is of equal length to the other arm of the pair of members.

24. A bone harvesting apparatus according to claim 18, wherein a channel of the set of at least one dilation channels comprises means for docking to the bone.

25. A bone harvesting apparatus according to claim 24, wherein the means for docking comprises an arcuate sharp edge.

26. A bone harvesting apparatus, the apparatus comprising:

a collection shaft; and

a stainless steel cutting tip permanently attached to the collection shaft, the cutting tip

comprising openings adapted to allow cut bone chips to move into the collection shaft's interior.

27. An apparatus according to claim 26, wherein the cutting tip is bonded to the collection shaft.

28. An apparatus according to claim 26, wherein the cutting tip is mechanically fastened to the collection shaft.

29. An apparatus according to claim 26, wherein the cutting tip is ultrasonically welded to the collection shaft.

30. An apparatus according to claim 26, wherein the collection shaft comprises a biocompatible polycarbonate material.

31. A bone harvesting apparatus, the apparatus comprising:

a cutter device comprising, at the proximal end of a collection shaft, a depth gage that indicates a depth to which the cutter device has advanced into a patient's bone.

32. A bone harvesting apparatus according to claim 31, the apparatus further comprising:

calibration marks at the distal end of the collection shaft that indicate a volume of bone harvested.

33. A bone harvesting apparatus according to claim 31, wherein the depth gage is readable when the cutter device is inserted into a dilation channel.

34. A method of harvesting bone, the method comprising:

creating a conduit from a patient's skin to a bone harvest site through a small incision in the patient's skin;

expanding the diameter of the conduit by inserting, into the small incision, a dilation channel; and

inserting a cutter device, comprising a hollow collection shaft, into the small incision.

35. A method according to claim 34, wherein the method further comprises:

expanding the diameter of the conduit by inserting a plurality of dilation channels of sequentially increasing size.

36. A method of harvesting bone, the method comprising:

docking a channel to a bone harvest site; and

inserting a bone harvesting device into the channel, the bone harvesting device comprising a hollow collection shaft.

37. A method of harvesting bone according to claim 36, the method further comprising:

moving the channel in an arcing motion over the bone harvest site to permit the bone harvesting device to harvest bone from more than one position.

38. A method according to claim 36, wherein the channel comprises a pair of members protruding from its distal end to position itself against the bone harvest site.

39. A method according to claim 36, wherein the channel comprises means for docking to the bone harvest site.

40. A method according to claim 39, wherein the means for docking comprises an arcuate sharp edge.

41. A method according to claim 36, wherein the channel is inserted through a percutaneous incision.

42. A method of harvesting bone, the method comprising:

inserting a hollow cylindrical coring device, comprising a permanently attached cutting tip, through a guided delivery system to engage a bone harvest site; and

rotating the coring device in each of a clockwise and counterclockwise direction, the rotation in each direction harvesting bone through the permanently attached cutting tip.

43. A method according to claim 42, wherein the cutting tip is bonded to the coring device.

44. A method according to claim 42, wherein the cutting tip is mechanically fastened to the coring device.

45. A method according to claim 42, wherein the cutting tip is ultrasonically welded to the coring device.

46. A method according to claim 42, wherein the hollow cylindrical coring device is inserted through a percutaneous incision.

47. A method of harvesting bone, the method comprising:

inserting a hollow cylindrical coring device, comprising a permanently attached cutting tip, through a guided delivery system to engage a bone harvest site; and

directing a downward force on the coring device, the downward force engaging a downward-facing cutting edge against the bone harvest site, the downward-facing cutting edge extending in a circumferential direction with respect to a circle in a plane perpendicular to a longitudinal axis defined by a shaft of the coring device.

48. A method according to claim 47, wherein directing a downward force on the coring device is performed in combination with rotating the coring device about the longitudinal axis.

49. A method according to claim 47, wherein the downward-facing cutting edge extends circumferentially around less than a full circle.

50. A method according to claim 47, wherein the hollow cylindrical coring device is inserted through a percutaneous incision.

51. A method according to claim 47, wherein the cutting tip is bonded to the coring device.

52. A method according to claim 47, wherein the cutting tip is mechanically fastened to the coring device.

53. A method according to claim 47, wherein the cutting tip is ultrasonically welded to the coring device.

54. A coring device for harvesting bone, the coring device comprising:

a hollow cylindrical shaft defining a longitudinal axis; and

a cutting tip permanently attached to the shaft, the cutting tip being configured to permit harvested bone to pass into the hollow cylindrical shaft and comprising:

two protruding blades joined at one end, each protruding blade comprising a counterclockwise cutting edge and a clockwise cutting edge; and

two downward-facing cutting edges, each extending in a circumferential direction with respect to a circle in a plane perpendicular to the shaft's longitudinal axis.

55. A coring device according to claim 54, wherein the cutting tip further comprises:

two support blades, each support blade comprising a counterclockwise cutting edge and a clockwise cutting edge and extending between a support section of the cutting tip and one of the protruding blades.

56. A coring device according to claim 54, wherein the two protruding blades are at a 45° angle to the shaft's longitudinal axis.

57. A coring device according to claim 54, wherein the cutting tip is bonded to the hollow cylindrical shaft.

58. A coring device according to claim 54, wherein the cutting tip is mechanically fastened to the hollow cylindrical shaft.

59. A coring device according to claim 54, wherein the cutting tip is ultrasonically welded to the hollow cylindrical shaft.